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# AMERICAN SOCIETY OF CIVIL ENGINEERS

## PROCEEDINGS

VOL. 55

JANUARY, 1929

No. 1

### SOCIETY AFFAIRS

#### ANNUAL MEETING

Once again the season for the Annual Meeting approaches. To some it means the winding up of important Society technical work; to others the detail of preparation for entertainment; and to another one the privilege to attend important technical sessions. But by and large the every-day, average member looks forward to it as a chance to see his old "pals", to renew past acquaintanceships, and to keep his engineering friendships "in good repair".

Annual Meetings have the tendency to become more or less uniform. There is the somewhat regular list of programs, the standardized constitutional day of meeting; and yet each has its own appeal. The award of prizes and the acclaim of prize winners is always interesting. Engineers love to give credit where credit is due. Then there is the bestowal of Honorary Membership at this same Annual Meeting, another event at which engineers vie in leaving no doubt as to their feelings of pride and accomplishment. Of course, the Committee Reports and Technical Division Meetings have their individual appeals. Probably the several attractions of these many meetings will leave many a member in a quandary as to how best he may utilize his all-too-little available time.

Then, again, the social events have their proper place—the Dinner Dance with its usual rather formal yet most enjoyable setting; the Smoker with its amusement and sociability, will fill its usual place in the enjoyment of a thousand or more members. Finally, there is the all-day excursion through New York Harbor to visit prominent examples of recent and current bridge engineering to conclude the events of the meeting.

Of course, the Certificate Plan for railroad fares will again be in vogue. It may not be necessary to remind members that co-operation gives to this feature of the Annual Meeting the attraction of financial possibility to many a member, especially the distant one, but that this is only made possible by the generous help of the relatively near-by member. It is worth the support of every one for the sake of its special value to the few.

The official program, which will be in the hands of every member shortly, if it is not already, gives the complete details. It is not a bad idea to fill out the registration cards immediately, while the impulse is strong and in the right direction. The 1929 Annual Meeting calls to every member.

#### STUDENT CHAPTER PROGRAMS

Local conditions probably govern, to a large extent, the details of yearly procedure for the Student Chapters in regard to meetings. Probably they are much alike in many respects among the various Chapters.

Recently, an attractive yearly program was issued in behalf of the University of Colorado Student Chapter. Some of its features may likewise appeal to other Chapters as worthy of notice or even imitation. In the first place it was attractively gotten up—a four-page folder to fit readily in the pocket, and printed on fairly stiff paper. Meetings for the coming year were scheduled complete from beginning to end, subjects and authors in detail.

On an average, two meetings a month are the custom, with of course the usual lapse for holiday and vacation sessions.

Every one of the Senior Class members is represented by a talk or a paper. These cover various important phases of engineering work with a tendency to specialize if anything on the lives of famous engineers, even of some living notables, not forgetting the President-Elect. Another important phase of the work consists of two joint meetings with the nearest Local Section, that at Denver. At one of these meetings, the Student Prize is awarded. Interspersed with the list are several addresses by near-by members of the Society, on interesting subjects or projects.

All in all the list makes a rather complete and entirely attractive set-up. Even an older member would feel the urge to attend some of these meetings, not only the purely social events, but those of a more serious or historic nature. A complete list of officers and members appears on the rear page. Doubtless this in itself will make the program a fitting souvenir of college life, perhaps to adorn in future a page of a much prized scrapbook. The University of Colorado Student Chapter, probably typical of many others, seems aggressive and business-like. If its meetings come anywhere near realizing the standard of its systematized program, it will have a successful year, 1928-29.

### FREEMAN FUND STUDIES

A recent letter from Dr. C. E. Bardsley, the latest appointee to the Freeman Fund Scholarship, indicates that the Society representation is again complete and in harness for its important study in Europe.

After a pleasant voyage, Dr. Bardsley spent considerable time in England, in pleasant sight-seeing and enlightening visits to engineering institutions and laboratories. Thence, he moved down to Wilhelmshaven, and, finally, to Berlin, where he is now established for the time being, and working with Dr. Lorenz G. Straub, the other Society representative, and Messrs. Drisco and Schultz, also Freeman Fund Scholars.

It is expected that the coming year will add much to the equipment of these men. Frequent reports indicate their promising advancement and strengthen the hope that the field of American river hydraulics will receive a great impetus from their studies.

### JOINING AMERICAN ENGINEERING COUNCIL

On November 27, members recorded their opinions regarding authorizing the Board of Direction, for the Society, to join American Engineering Council. The vote speaks for itself, as shown by the Tellers' report, as follows:

"33 West 39th St.  
New York, N. Y.  
November 27, 1928.

"Mr. GEORGE T. SEABURY, *Secretary*,  
American Society of Civil Engineers:

"DEAR SIR.—The Tellers appointed to canvass the ballot on Joining American Engineering Council report as follows:

"Total number of ballots received.. 4 406

Deduct:

Ballots from members in arrears of dues.....	62
Ballots from non-corporate members .....	1
Ballots with indecipherable signature.....	1
Ballots without signature.	17
Ballots with printed signature .....	1
Ballots from members who have died since voting .....	5
Total ballots not canvassed.	87

"Ballots canvassed..... 4 319

Deduct:

Void ballots.....	0
Blank ballots.....	4
Total ballots not counted....	4

"Ballots counted..... 4 315

"Shall the Judgment of the Board of Direction of the American Society of Civil Engineers Be Confirmed and Shall the Membership Authorize the Board to Join American Engineering Council?

Yes .....	3 991
No .....	324

"Respectfully submitted

"GEORGE L. LUCAS, *Chairman*,  
CHARLES M. MADDEN,  
NICOLAAS T. F. STADTFELD,  
WILLIAM J. SHEA,  
H. L. HURD,  
LEICESTER DURHAM,  
CHARLES M. NOBLE,  
THOMAS G. GUERIN,  
WILBUR T. WILSON,  
F. B. MARSH,  
F. B. BARSHELL,  
ANDERS BULL,  
"Tellers."

## ARBITRATION

Arbitration is a subject in which engineers, especially those familiar with construction work, are vastly interested. Perhaps the greatest force in this general endeavor comes from the American Arbitration Association.

This body, with the help and advice of noted legal talent and many engineers, including important members of the Society, has drawn up a model State Arbitration Act. Already this has been endorsed by the Society. Early in 1929 it will be submitted to the Legislatures of thirty-seven States as a commercial arbitration law most favorable to the requirements of modern business. In all more than one hundred leading National trade bodies are behind this movement.

Arbitration is an uncertain remedy for the settlement of business controversies in these thirty-seven States because an agreement to arbitrate a dispute later arising out of a contract may be repudiated by either party and no provision is made to secure the assistance of the Courts to compel the arbitration to proceed. In seven States—New York, New Jersey, Massachusetts, California, Pennsylvania, Oregon, and Louisiana—as well as under the Federal Arbitration Act, such an arbitration agreement is effective insurance against litigation, since it bars an action at law over a controversy arising out of the contract and requires the parties to settle it by arbitration. As a result, business men in New York, Philadelphia, Boston, San Francisco, and other cities in the seven States mentioned, have many economic advantages over those in such cities as St. Louis, Chicago, Seattle, and Cleveland, and in all the other States because of the inadequate or limited arbitration statutes in such States.

The enactment of the Draft State Arbitration Act in all the States would re-

move these geographical business handicaps. All arbitration agreements would then be uniformly applicable throughout the country, and commercial disputes would be settled speedily, inexpensively, and with finality.

Briefly summarized, the Draft Act provides as follows:

(1) When parties voluntarily agree to arbitrate all future disputes arising out of a contract and insert a clause to that effect, or submit to arbitration an existing dispute, such agreements are valid, irrevocable, and enforceable in the same manner as any other agreement.

(2) When a party to such an agreement fails, refuses or neglects to proceed with the arbitration, the Court will direct him to do so.

(3) When a party brings an action in Court on a dispute arising out of such a contract, the Court will stay the trial until the arbitration has been concluded.

(4) In order to expedite the proceedings, arbitrators are empowered to hold hearings, summon witnesses, and order the production of books and papers.

(5) When a party refuses to comply with or perform an award, the Court is required to enter judgment thereon, unless there is proof of misconduct or bias by the arbitrators or if they have exceeded their authority.

(6) The judgment on an award is executed in the same manner as a judgment in an action.

(7) The award is final as to the merits of the controversy and the Court cannot review the facts or render a new decision.

(8) Quick and decisive action is assured on all applications to the Court, as "motions" are not generally subject to the usual calendar delays.

Copies of the Draft State Arbitration Act can be obtained from Society Headquarters.

## Local Sections\*

**Colorado.**—October 16, 1928. The regular dinner meeting of the Section was held at the Denver Athletic Club, in Denver. After a brief outline of the tentative programs for the future meetings of the year, Mr. Oliver T. Reedy introduced Major L. D. Blauvelt, who spoke on "The Organization and Administration of the Colorado State Highway Department". Major Blauvelt was followed by J. E. Maloney, Assistant State Highway Engineer, who gave an interesting talk on "The Development and Recent Practice in Highway Engineering". Mr. Finlay McFarland then spoke on "Financing a Good Roads Program for Colorado". An informal vote was taken relative to the proposed Engineers' Club in Denver, after which a discussion on the subject of Technical Papers concluded the meeting. Attendance 32.

**Dayton.**—November 12, 1928. A general discussion of the traffic and transit problems and the recommendations contained in the Harris Report was held at a regular noonday meeting of the Section at the Engineers' Club. Professor H. E. Riggs, of the University of Michigan, Ann Arbor, Mich., made some observations regarding similar problems in other cities. A motion was adopted by the Section relative to an expression of approval of the recommendations of the Harris Report and the willingness of the Section to co-operate with the City Commission in aiding to bring about the adoption of the plans approved by the Commission. Attendance 40.

**Detroit.**—October 16, 1928. At the Annual Meeting of the Section the following officers were elected for the ensuing year: President, Alexander Linn Trout; First Vice-President, Joseph H. Wasson; Second Vice-President, A. Harrington Place; and Secretary-Treasurer, Harry A. Shuptrine. Dinner was served at the Detroit Engineering Society Club House, after which a business session was held at which the question of soil bearing tests and soil characteristics of the neighborhood was discussed. Attendance 50.

**District of Columbia.**—November 23, 1928. At the Fall Meeting of the Section held at the Cosmos Club of Washington, the subject for the evening was "Recent Developments in Society Affairs, Including Changes in Policy". A discussion was led by Vice-President John C. Hoyt, and Col. D. H. Sawyer, Director of the Society, who reviewed the developments affecting the Society as well as its recent activities. The Section numbered among its guests for the evening Dean Anson Marston, of Iowa State College, official nominee for the Presidency of the Society, F. L. Nicholson, Chief Engineer of the Norfolk Southern Railroad Company, official nominee for Director for District No. 5, and Professor H. S. Jacoby, of Cornell University.

**Kansas (State).**—October 11, 1928.—This was a joint meeting of the Section and the Kansas City Section held at the University Club in Kansas City. The guests of honor for the evening were President Bush and Secretary Seabury. Attendance 21.

\* For list of Local Section Officers, Rules, etc., see 1928 Year Book, p. 46.



**New York.**—November 21, 1928. The regular monthly meeting of the Section was devoted to the subject, "Special Features of Subway Construction". Mr. Frederick Tench, of Terry and Tench, chose as his topic, "Steel Erection", under which he outlined the progress made in this type of work since the building of the first subway in New York. "Handling Subsurface Water" was discussed by Messrs. Charles Goodman, of Heyman and Goodman, and John H. C. Gregg, Chief Engineer of the Oakdale Construction Company. Mr. Goodman gave special attention to the use of sumps for this work, and Mr. Gregg spoke on the use of well points. Developments in the quality of concrete since the early days of subway construction were described by George L. Lucas, Division Engineer of the Board of Transportation of New York. Attendance 340.

**Northeastern.**—October 11, 1928. A luncheon meeting of the Section was held at the Boston City Club of Boston. Karl R. Kennison, former Chief Engineer of the South Essex Sewerage District, introduced Bayard F. Snow, Resident Engineer of the District, who told briefly of the general problem of the construction work on the sewerage system for the cities and towns around Salem and Beverley Harbor, Mass. One of the interesting features of this project was the laying of the deep-sea outfall pipe, which comprised more than  $1\frac{1}{2}$  miles of 54-in. cast-iron pipe with an outlet 30 ft. below mean low tide. A discussion concluded the meeting. Attendance 33.

November 7, 1928. This was a luncheon meeting of the Section held at the Boston City Club, at which Director Harrison P. Eddy spoke briefly on Society matters and Professor C. M. Spofford presented a progress report of plans and information relative to the quarterly meetings of the Section. An interesting address on "The Principles of Traffic Control" was given by Maxwell N. Halsey, Traffic Engineer, which was followed by an informal discussion concluding the meeting. Attendance 44.

**Northwestern.**—November 16, 1928. A dinner meeting was held at the Men's Union Building, the University of Minnesota, Minneapolis, Minn., at which the Local Chapters of the American Institute of Architects, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the St. Paul Engineers' Club, and the Minneapolis Engineers' Society, were the guests of the Section. Frank P. McKibben, Consulting Engineer, of Schenectady, N. Y., gave an address on the subject, "Electric Welding of Bridges and Buildings". Mr. McKibben illustrated his talk by slides showing welded buildings and bridges, and brought out the advantages of economy for certain types of structures and the lack of noise during erection, describing in all, three types of welds—resistance welds, electric arc welds, and hydrogen arc welds. A discussion followed. Attendance 68.

**St. Louis.**—November 26, 1928. The regular meeting of the Section was held at the City Club. After various committee reports, the following officers were elected for 1929: President R. J. Lockwood; First Vice-President, William C. E. Becker; Second Vice-President, F. W. Green; Secretary-Treasurer, R. A. Willis; Counselor for one year, C. M. Daily; Counselor for two years, J. C. Pritchard; and Alternate Counselor, E. B. Fay. The retiring

President, Mr. E. O. Sweetser, made a brief report, stressing the advisability of continuing the friendly relations established with the Student Chapters and advocating representation of the Section at Local Sections Conventions. Col. F. W. Green suggested that consideration be given by the engineer to the matter of obtaining proper publicity, in an effort to acquaint the public with the value of his services. In conclusion, a vote of thanks was extended to the retiring President and officers for their services during the past year.

**Syracuse.**—November 19, 1928. This was a dinner and business meeting held at the Onondaga Hotel. Reports on the Buffalo and San Diego Meetings of the Society were presented by Messrs. S. N. Grimm and Ernest F. Robinson, respectively, after which the Section adjourned to the regular meeting of the Technology Club with which it is affiliated. The address of the evening was given by Mr. O'Roark, of the Bell Telephone Laboratories. Attendance 26.

**Texas.**—November 16 and 17, 1928. At the Annual Meeting of the Section held in Laredo, Salvador Toscano, Chief Engineer of the Northern Division, representing the National Highway Department of Mexico, presented an interesting discussion of the Monterrey-Laredo Section of the Pan-American Highway. This address was followed by a paper and discussion relative to the Don Martín Irrigation Project which is located approximately 80 miles southwest of Laredo, in Old Mexico. On Saturday, members in attendance at the meeting were the guests of the J. G. White Engineering Corporation, the National Commission of Irrigation, and the National Highway Commission of Mexico, on a trip of inspection to the Don Martín Project. The Section numbered among its native guests from Mexico, Messrs. A. B. Colín and Jesus Oropesa as appointed delegates from the National Irrigation Commission, and Messrs. Toscano Salvador, V. L. Valdez, and F. G. Gaxiola, from the Highway Commission. Papers from local members consisted of the following: "Location and Construction Features of Unit One on Texas Highways", by Gibb Gilchrist, State Highway Engineer; "Beautification of American Highways", by O. H. Koch; and "Some Underground Waters of West Texas and Other Geological Horizons", by H. N. Roberts. The meeting was concluded with the election of the following officers for 1928-29: President, W. J. Powell; First Vice-President, M. C. Welborn; Second Vice-President, E. W. Robinson; and Secretary-Treasurer, J. T. L. McNew. Attendance 120.

**Western Washington.**—October 30, 1928. The regular monthly meeting of the Section was held at the Engineers' Club in the Arctic Building, Seattle. The principal address of the evening was delivered by Charles N. Monteith, Chief Engineer of the Boeing Airplane Company, who chose as his subject "The Future of Air Transportation". Attendance 58.

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## Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 71 and 72 of the Year Book for 1928.

### Book Notices\*

(November 1 to November 30, 1928)

**Aerial Photography; a Comprehensive Survey of Its Practice and Development.** By Clarence Winchester and F. L. Wills. Bost., Am. Photographic Publishing Co., 1928. 236 pp., illus., pl., 10 x 8 in., cloth. \$10.00.

The material and apparatus now available are described in detail, also the applications of aerial photography to surveying, mapping, archaeology, and other sciences.

**Concrete, Plain and Reinforced; Vol. 2.** By Frederick W. Taylor, Sanford E. Thompson, and Edward Smulski. Fourth Edition. N. Y., John Wiley & Sons, 1928. 688 pp., diagrams, tab., 9 x 6 in., cloth. \$7.50.

This volume consists of entirely new material. It is claimed to be the first book to treat statically indeterminate structures fully from both the theoretical and the practical points of view. Continuous beams are treated exhaustively, also rigid frames, building frames, and fixed and two-hinged arches.

**Construction of Alignment Charts.** By George W. Swett. N. Y., John Wiley & Sons, 1928. 92 pp., 8 x 6 in., cloth. \$2.00.

This elementary text founded on ordinary algebra, geometry, and trigonometry, is sufficient to enable the user to construct charts for equations of various forms frequently used in engineering.

**Dachbauten, Kragdächer, Schalen, und Rippenkuppeln.** By H. J. Kraus and Fr. Dischinger. Fourth Edition. (Handbuch für Eisenbetonbau, Bd. 6, t. 2.) Berlin, Wilhelm Ernst & Sohn, 1928. 390 pp., illus., diagrams, tab., 10 x 7 in., paper. 25,50 r.m.

In this volume of the Handbook of Reinforced Concrete Construction the first section discusses the design of various types of roofs and of their structural elements. The second section treats domes in a similar fashion.

**The Engineer; His Work and His Education.** By Robert Lemuel Sackett. Bost. and N. Y., Ginn & Co., 1928. 196 pp., illus., graphs, ports., 8 x 6 in., cloth. \$1.40.

For the guidance of young men who are thinking of choosing engineering for their life-work, the author discusses the aptitudes and abilities that the engineer should have, his financial rewards, and his education. Various branches of engineering practice are analyzed, to assist in the selection of the most suitable ore.

**Engineering Drawing.** By Harvey H. Jordan and Randolph P. Hoelscher. Second Edition. N. Y., John Wiley & Sons, 1928. 404 pp., illus., diagrams, 9 x 6 in., cloth. \$3.00.

This textbook offers a sound course in engineering drawing, sufficiently detailed and comprehensive to meet all ordinary needs.

\* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

**Gewerbliche Abwässer; Ihre Reinigung, Beseitigung, und Nutzbare Verwertung.** By Bruno Böhm. Berlin, Otto Elsner, 1928. 320 pp., illus., 9 x 6 in., paper. 15,— r.m.

In this practical reference book on the disposal of sewage and industrial wastes the author reviews modern methods of purification and utilization, describing present practice in municipal work and in mining, chemical factories, blast-furnaces, sugar refining, slaughtering, and brewing.

**The Great Engineers.** By Ivor B. Hart. Lond., Methuen & Co., 1928. 136 pp., illus., 7 x 4 in., cloth. 3/6.

After a description of engineering in classical times, Dr. Hart surveys medieval ages, particularly as exemplified by Leonardo da Vinci and Agricola. Attention is then directed to the great engineers of more recent times who gave to us control over power and materials by developing the steam and gas engines and producing iron and steel.

**History of the Sheffield Scientific School of Yale University, 1846-1922.** By Russell H. Chittenden. New Haven, Yale Univ. Press, 1928. 2 v., illus., ports., 10 x 7 in., cloth. \$10.00.

From 1872 until to-day Dr. Chittenden has been connected with the Sheffield Scientific School as student, professor, director, and trustee. No one has had a better opportunity to know, at first hand, the course of its development.

**Land Drainage and Reclamation.** By Quincy Claude Ayres and Daniels Scoates. N. Y., McGraw-Hill Book Co., 1928. 419 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$4.00.

This book discusses surveying, surface and sub-surface drainage, the clearing of land, and the control of washing, from the point of view of the average farmer.

**One Hundred Years of American Railroadng.** By John W. Starr, Jr. N. Y., Dodd, Mead & Co., 1928. 336 pp., illus., 8 x 6 in., cloth. \$3.50.

This is a popular account in outline of the beginnings of the great railroad systems of the United States.

**Principles of Transportation.** By Emory R. Johnson, Grover G. Huebner and G. Lloyd Wilson. N. Y., D. Appleton & Co., 1928. 815 pp., charts, forms, 9 x 6 in., cloth. \$5.00.

This book deals with the business of transportation, as distinct from its mechanism. It emphasizes the service rendered by the carriers and business principles rather than public policy and Government regulation, discussing rail, water, road, and air transportation, not only as separate services, but as parts of a co-ordinated system.

**Spannungskurven in Rechteckigen und Keilförmigen Trägern.** By Akira Miura. Berlin, Julius Springer, 1928. 111 pp., illus., diagrams, tab., 9 x 6 in., paper. 11.— r.m.

This new theory of the distribution of stresses in beams, uses two comparatively unknown curves, the isoclinic and the isochromatic, by which the direction and magnitude of the principal stresses at any point can be determined. The theory is checked by optical investigations of glass models.

**Story of Engineering in America.** By Chelsea Fraser. N. Y., Thomas Y. Crowell Co., 1928. 471 pp., illus., 8 x 6 in., cloth. \$2.50.

This popular account of American achievements in building roads, railroads, bridges, tunnels, reservoirs, harbor improvements, mines, and buildings, will appeal to boys as well as to general readers.

**Structural Engineering.** By Joseph Husband and William Harby. Fourth Edition. Lond. and N. Y., Longmans, Green & Co., 1928. 458 pp., illus., diagrams, 9 x 6 in., cloth. \$5.50.

In this textbook, the main outlines of theory are applied to the practical design of structures and details of everyday occurrence. Arithmetical methods are given preference. Ordinary steel and masonry structures are treated.

**Winter Construction Methods; Processes and Plant Employed in Prosecuting Construction Operations in Cold Weather.** By Charles S. Hill. N. Y., McGraw-Hill Book Co., 1928. 180 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$3.00.

This book presents methods that have been successful in construction, especially in concrete, during winter.

Abbr

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A. R.A. S.  
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Am.Am.  
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## Current Civil Engineering Literature

### Key to Abbreviated References to Publications Indexed\*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, <i>Proceedings</i> (Y.)	Detroit
A. I. E. E.....	American Institute of Electrical Engineers <i>Journal</i> (M.)	New York
A. R. E. A.....	American Railway Engineering Association, <i>Proceedings</i> (Y.)	Chicago
A. S. T. M.....	American Society for Testing Materials, <i>Proceedings</i> (Y.)	Philadelphia
Am. Soc. C. E.....	American Society of Civil Engineers, <i>Proceedings</i> (M.)	New York
Am. Soc. Mun. Impvts.	American Society for Municipal Improvements, <i>Proceedings</i> (Y.)	New York
Am. W. W. Assoc.....	American Water Works Association, <i>Journal</i> (M.)	Baltimore
Am. Wood Pres. Assoc.	American Wood Preservers Association, <i>Proceedings</i> (Y.)	Chicago
Ann. P. et C.....	Annales des Ponts et Chaussées (Bl-M.)	Paris
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (Bl-M.)	Brussels
Assoc. Ing. Gand.....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.....	Boston Society of Civil Engineers, <i>Journal</i> (M.)	Boston
Can. Engr.....	Canadian Engineer (W.)	Toronto
City Plan.....	American City Planning Institute (Q.)	Boston
Commonw. Engr.....	Commonwealth Engineer (M.)	Melbourne
Conc.....	Concrete (M.)	Chicago
Cornell C. E.....	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour.....	Dock and Harbour Authority (M.)	London
Eng.....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (M.)	Chicago
Eng. Inst. Can.....	Engineering Institute of Canada, <i>Journal</i> (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	New York
Engr. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, <i>Journal</i> (M.)	Pittsburgh
Engr.....	Engineer (W.)	London
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gas und Wasser.....	Gas und Wasserfach	Munich
Gen. Civ.....	Le Génie Civil (W.)	Paris
Gesund. Ing.....	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs.	Institution of Municipal and County Engineers, <i>Journal</i> (W.)	London
Int. Ry. Cong. Assoc.	International Railway Congress Association, <i>Bulletin</i> (M.)	Brussels
Land. Arch.....	Landscape Architecture (Q.)	Boston
Mech. Eng.....	Mechanical Engineering (M.), <i>Journal of the American Society of Mechanical Engineers</i>	New York
Mil. Engr.....	Military Engineer (Bl-M.)	Washington
Min. & Metal.....	Mining and Metallurgy (M.), <i>American Institute of Mining Engineers</i>	New York
Mun. N. & W. W.....	Municipal News & Water Works (M.)	Chicago
N. E. W. W. Assoc.....	New England Water Works Association, <i>Journal</i> (Q.)	Boston
N. Y. R. R. Club.....	New York Railroad Club, <i>Proceedings</i> (M.)	Brooklyn
Oest. Ing. Arch. Ver.....	Oesterreichischer Ingenieur und Architekten Verein, <i>Zeitschrift</i> (F.)	Vienna
Power.....	Power (W.)	New York
Public W.....	Public Works (M.)	New York
Rev. Gen.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age.....	Railway Age (W.)	New York
Ry. Eng. & Main.....	Railway Engineering and Maintenance (M.)	Chicago
R. & S.....	Roads and Streets (M.)	Chicago
Schw. Bauz.....	Schweizerische Bauzeitung (W.)	Zurich
Sci. Am.....	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.....	Société des Ingénieurs Civils de France, <i>Mémoires et Comptes Rendus</i> (Q.)	Paris
Tech. Gemein.....	Technisches Gemeindeblatt (F.)	Berlin
Ver. deu. Ing.....	Verein deutscher Ingenieure, <i>Zeitschrift</i> (W.)	Berlin
West. Constr. N.....	Western Construction News (F.)	San Francisco
West. Ry. Club.....	Western Railway Club, <i>Proceedings</i> (M.)	Chicago
West. Soc. Engrs.....	Western Society of Engineers, <i>Journal</i> (M.)	Chicago
Zelt. Bau.....	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauver.....	Zeitraftblatt der Bauverwaltung (W.)	Berlin

\* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.



## A. Applied Sciences

### a. Processes of Calculation

#### 3. Stresses and Strains

Calcul des Conduites Cylindriques Enterrées à Vide.\* (Calculation of Cylindrical Pipes Buried Empty.) E. Massotte. Gen. Civ. Oct. 13, '28.

## B. Applied Mechanics

### a. Mechanics of Solids (Strength of Materials)

#### 2. Elastic Solids

Statische Grundlagen zum Schwingungsbruch.\* (Statistic Fundamentals on Vibration Fracture.) W. Kuntze. Ver. deu. Ing. Oct. 20, '28.

#### 6. Heterogeneous Solids (Reinforced Materials)

Ultimate Strength in Diagonal Tension of Reinforced Beams.\* H. E. Pulver. Conc. Nov., '28.  
L'Amélioration des Constructions en Béton Armé par l'Introduction de Déformations Élastiques Systématiques.\* (Improvement of Reinforced Concrete Constructions by the Introduction of Systematic Elastic Deformations.) E. Freyssinet. Gen. Civ. Sept. 15, '28.  
Eisenbeton in Reinigergebäuden.\* (Reinforced Concrete in Purifier Buildings.) Zimpell and Frank. Gas und Wasser Sept. 29, '28.

### b. Hydraulics

#### 1. Processes of Measurement

Precise Weir Measurements. Discussion: Clemens Herschel. Am. Soc. C. E. Nov., '28.

#### 2. Physical Hydraulics

Circulation by High Velocity Jets.\* I. M. Fraser. Can. Engr. Oct. 23, '28.  
Durchflussbeiwerte der IG-Messmündungen für Wasser, Oel, Dampf und Gas.\* (Auxiliary Flow Values of the IG Measuring Orifices for Water, Oil, Steam and Gas.) R. Witte. Ver. deu. Ing. Oct. 20, '28.

#### 3. Industrial Hydraulics

Alouette Hydro-Electric Power Station.\* C. W. Colvin. Can. Engr. Oct. 30, '28.  
Ohio Falls Hydro Development at Louisville Meets Unusual High-Water Conditions.\* Harrison G. Roby. Mech. Eng. Nov. '28.  
Siltng of the Lake at Austin, Texas.\* Discussion: R. F. Walter, William Jenner Powell, and R. I. Meeker. Am. Soc. C. E. Nov., '28.  
Pumped-Storage Hydro-Electric Plants.\* William W. K. Freeman. Am. Soc. C. E. Nov., '28.  
Saskatchewan Power Commission's Report.\* Can. Engr. Nov. 6, '28.  
Exécution de la Percée du Lac d'Artouste en Vue de Son Aménagement en Réservoir Saisonnier.\* (Piercing Lake Artouste to Lead it to Saisonnier Reservoir.) J. Leclerc du Sablon. Ann. P. et C. July, '28.  
Le Canal d'Aménée de l'Usine d'Artouste (Basses-Pyrénées) de la Compagnie des Chemins de Fer du Midi.\* (The Flume for the Artouste Plant (Lower Pyrenées) of the Compagnie des Chemins de Fer du Midi.) G. Massonneau. Gen. Civ. Sept. 29, '28.  
L'Usine Hydro-électrique de Galleto (Italie) Ouvrages de Prise d'Eau.\* (Galleto Hydro-Electric Plant (Italy) Intake Structures.) Ch. Dantin. Gen. Civ. Oct. 6, '28.  
Vom Bau des Grimselwerkes der Kraftwerke Oberhasli A.-G.\* (Construction of the Grimsel Plant of the Oberhasli Power Plant.) Schw. Bauz. Sept. 29, '28.  
Vom Rhein-Kraftwerk Ryburg-Schwörstadt.\* (The Ryburg-Schwörstadt Rhine Power Plant.) Schw. Bauz. Oct. 13, '28.  
Die Grosswasserkraftanlage am Shannon.\* (The Large Water Power Plant on the Shannon.) M. Enzweller. Ver. deu. Ing. Oct. 20, '28.

#### 4. Dams

Dams With Stopped Water Levels.\* A. Floris. West. Constr. N. Oct. 25, '28.  
Engineering Foundation Committee on Arch Dam Investigation.\* Discussion: Roy M. Green, Harry O. Wood, and R. A. Sutherland. Am. Soc. C. E. Nov., '28.  
Analysis of Arch Dams by the Trial Load Method.\* Discussion: Fredrik Vogt and A. Floris. Am. Soc. C. E. Nov., '28.

### c. Pneumatics

#### 2. Physical Pneumatics

Final Report of the Committee of the Structural Division on Florida Hurricane. Discussion: F. O. Dufour and T. L. Condron. Am. Soc. C. E. Nov., '28.

## C. Materials of Construction and General Processes

### a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, Timber, Gravel etc.

Reinforced Concrete as a Structural Material. A. E. Lindau. West. Soc. Engrs. Oct., '28.  
Waterproofing Concrete Integrally.\* J. A. Meacham. Conc. Nov., '28.  
The Compressibility of Sand-Mica Mixtures. Discussion: D. P. Krynnine. Am. Soc. C. E. Nov., '28.  
New and Simple Method for Determining Moisture Content in Aggregates.\* Walter M. Dunagan. Eng. N. R. Nov. 15, '28.  
Factors in the Economical Buying of Lumber.\* (From report of Nat'l Comm. on Wood Utilization.) Serial beginning Ry. Age Nov. 17, '28.

### b. Metals

Die Benutzung der Streckgrenze bei Berechnung und Abnahme.\* (The Use of the Elastic Limit in Calculation and Reception.) Kühnel. Ver. deu. Ing. Sept. 1, '28.

## c. Preservation and Use of Materials, Painting, Waterproofing

Beanspruchung von Schutzanstrichen an Fahrzeugen.\* (Wear of Protective Coatings on Vehicles.) Konig. Ver. deu. Ing. Sept. 1, '28.

## f. Rock Excavation, Mining, Rock Removal

Das Kohlenwerk in Ampfelwang der Wolfsegg-Trauntaler Kohlenwerks-A. G.\* (The Colliery of the Wolfsegg-Trauntaler Kohlenwerks A. G. at Ampelwang.) Fritz Emperger. Oest. Ing. Arch. Ver. Aug. 31, '28.

## g. Execution of Works, Specifications

## 2. Of Concrete

Character of Aggregates in Concrete. A. T. Goldbeck. (Paper read before Am. Concrete Inst.) Can. Engr. Oct. 16, '28.  
Water a Factor in Workability.\* R. L. Bertin. (From paper read before Am. Concrete Inst.) Can. Engr. Oct. 16, '28.  
Heavy Duty Concrete Floor Surfaces. Charles E. Covell. (Paper read before Am. Concrete Inst.) Can. Engr. Oct. 23, '28.  
Effect of Quality of Portland Cement Upon the Strength of Concrete.\* F. H. Jackson. (From report of Mich. State Highway Dept. and Bureau of Pub. Roads.) Conc. Nov., '28.  
Concrete Runway at Ford Airport.\* E. K. Smith. Eng. N. R. Nov., '28.  
Complex Concrete Building Designed for Quick Construction.\* Dennis Hebold. Eng. N. R. Nov. 15, '28.

## h. Foundations, Bridge Piers, and Abutments

Mining the Palisades for Bridge Anchorages.\* Eng. N. R. Oct. 25, '28.  
The Science of Foundations—Its Present and Future.\* Discussion: D. P. Krynlne. Am. Soc. C. E. Nov., '28.  
Foundation Caused Collapse of Old Chicago Club Building.\* John O. Merrill. Eng. N. R. Nov. 8, '28.

## i. Cofferdams

Recépage d'un Batardeau en Palanches Métalliques à 2m50 au-dessous du Niveau de l'Eau.\* (Cutting off a Metallic Sheet-Piling Cofferdam 2.50 m below Water Level.) Cor. Ann. P. et C. July, '28.

## j. Piles and Pile-Driving

Concrete Piles Spliced With a Quick-Hardening Concrete.\* A. D. Conrow. Eng. N. R. Nov. 8, '28.

## k. Tunnels and Tunneling-Shield

Wet Tunnel Strengthened and Made Tight by False Roof.\* S. E. Berkenblit. Eng. N. R. Nov. 1, '28.  
Subaqueous Conduit Built Without Unwatering Site.\* Eng. N. R. Nov. 15, '28.  
Der Holland-Tunnel unter dem Hudson.\* (The Holland Tunnel under the Hudson.) J. Rosenthal. Ver. deu. Ing. Oct. 13, '28.

## D. Highways

## c. Construction

Design of Pavement Concrete by Water-Cement Ratio Method.\* F. H. Jackson. (From Public Roads.) R. & S. Oct., '28.  
Twelve Mile Paving Project Involving Viaduct and Bridge. R. & S. Oct., '28.  
Report on Experimental Road in U. S. A. J. Mathieson. Comwlth. Engr. Oct., '28.  
Construction Methods on Federal-Aid State Highway in Northern Illinois.\* R. & S. Oct., '28.  
The Modern Tendency in the Highway Design. Harold Giffen. (Paper read before Highway Officials of N. Atlantic States.) R. & S. Oct., '28.  
Bituminous-Sand Road Materials. K. A. Clark. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Concrete Bridges and Highways.\* R. M. Smith. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Construction of Earth Roads.\* H. R. MacKenzie. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Bituminous Treatments of Earth and Gravel Roads. H. G. Nicholson. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Highway Work in Northern Ontario.\* Wm. Finlayson. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
A Survey of Brick Pavement Performance.\* William H. Connell. Eng. N. R. Nov. 1, '28.  
Trunk Line Construction on Brazilian National Highways.\* Eng. N. R. Nov. 8, '28.  
Resurfacing Macadam Roads in Malaya.\* F. M. Starling. Can. Engr. Nov. 13, '28.  
Widening a Heavy-Traffic Street in St. Louis.\* W. W. Horner. Eng. N. R. Nov. 15, '28.

## d. Maintenance

Maintenance of Winter Highways.\* W. F. Rosenwald. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Les Travaux d'Entretien de la Route de Mont-Saint-Jean à Nivelles entre les Cumulées 22640 et 24340.\* (Treating the Road from Mont-Saint-Jean to Nivelles between the Levels 22640 and 24340. Gilsoul. Ann. T. P. Belg. Oct., '28.

## h. Vehicles, Automobiles, Traffic

Control of Motor Traffic. George A. Hood. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 6, '28.

Interprovincial Co-Operation in Uniformity of Road Signing and Traffic Control. Wm. Findlay. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
 Städtische Verkehrsfragen.\* (Municipal Traffic Questions.) H. Wüger. Schw. Bauz. Oct. 20, '28.

## E. Bridges, Viaducts and Arches

### b. Iron and Steel Bridges and Viaducts

The River Tyne Bridge, Newcastle. Eng. Oct. 19, '28.  
 Grand Canyon Highway Bridge, Arizona.\* West. Constr. N. Oct. 25, '28.  
 Steel Arch Highway Bridge Across Colorado River.\* Eng. N. R. Nov. 1, '28.  
 Calculs Simplifiés de L'Arc Symétrique Encastré aux Naissances.\* (Simplified Calculations of the Symmetrical Arch Fixed at the Springings.) A. Rogoff. Gen. Civ. Sept. 15, '28.  
 Lastverteilende Querverbindungen.\* (Load-Distributing Transverse Connections.) Franz Faltus. Oest. Ing. Arch. Ver. Serial beginning Oct. 26, '28.

### d. Concrete and Reinforced Concrete Bridges and Viaducts

Concrete Bridges and Highways.\* R. M. Smith. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
 Field Avenue Bridge, Windsor, Ontario.\* Hugh Robertson. Can. Engr. Oct. 23, '28.  
 The New Cobden Bridge, Southampton.\* Engr. Nov. 2, '28.  
 Long Concrete Trestle of Precast Units.\* Eng. N. R. Nov. 8, '28.  
 Pont en Béton Armé sur le Mississippi entre Saint-Paul et Minneapolis (Etats-Unis).\* (Reinforced Concrete Bridge over the Mississippi between St. Paul and Minneapolis (United States).) P. Caufourier. Gen. Civ. Sept. 8, '28.

### f. Suspension Bridges, Transfer Bridges

The Hudson River Bridge Between Fort Washington and Fort Lee.\* Engrs. & Eng. Oct., '28.  
 The Construction of the Delaware River Suspension Bridge.\* Eng. Serial beginning Oct. 26, '28.  
 Die neue Hudson-Brücke bei Fort Lee.\* (The New Hudson River Bridge at Fort Lee.) Z. d. Bauver. Oct. 10, '28.

### g. Swing, Bascule, Lift, Floating, Oscillating Bridges, Travelling Cranes

D. L. & W. Complete's Three-Track Lift-Span Bridge.\* Ry. Age Nov. 10, '28.  
 Construction of Lackawanna High-Level Crossing Over Hackensack River.\* W. H. Speirs. Eng. N. R. Nov. 15, '28.

### h. Computations, Tests, etc.

Continuous Beams Over Three Spans.\* Discussion: H. M. Hadley. Am. Soc. C. E. Nov., '28.

### x. Miscellaneous

Highway Bridge Maintenance in Allegheny County.\* R. H. Hellick. Eng. N. R. Oct. 25, '28.

## F. Inland Waters and Waterways

### b. Canals (General Articles)

Neuere Erfahrungen bei Erarbeiten und die Schleusen des Weser-Elbe-Kanals.\* (Recent Experiences in Earthwork and the Locks of the Weser-Elbe-Canal.) Goetzcke. Z. d. Bauver. Serial beginning Oct. 17, '28.

### c. Regulation of Waterways—Volume of Discharge, Freshets, Floods, Soundings.

Flood Control on the River Po in Italy.\* Discussion: M. Giandotti, R. D. Goodrich, and C. E. Grunsky. Am. Soc. C. E. Nov., '28.

### d. Diverting Dams, Locks, Lifts, Elevators, Inclined Planes

Die Hindenburgschleuse in Anderten am Mittellandkanal.\* (The Hindenburg Lock at Anderton on the Central Canal.) Goetzcke. Ver. deu. Ing. Oct. 13, '28.

## G. Maritime Works

### c. Vessels and Maritime Navigation, Lighthouses, Buoys, Various Signals

Die Motorschiffe "San Francisco" und "Los Angeles".\* (The Motorships "San Francisco" and "Los Angeles".) E. Goos and E. Gräber. Ver. deu. Ing. Oct. 13, '28.

### d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

Essai sur les Diques Maritimes Verticales.\* (Test on Vertical Maritime Dikes.) Sainflou. Ann. P. et C. July, '28.

### h. Wharves, Mooring Buoys, Harbor Equipment

Portique Flottant de 450 Tonnes Employé aux Travaux d'Extension du Port d'Alger.\* (450-Ton Floating Gantry used in Enlarging the Port of Algiers.) Gen. Civ. Sept. 23, '28.  
 Umschlaganlage für Kali in Harburg-Wilhelmsburg.\* (Trans-Shipping Plant for Potash in Harburg-Wilhelmsburg.) Petzel and Behrends. Ver. deu. Ing. Sept. 15, '28.  
 Kali-Umschlaganlage Antwerpen.\* (Potash Trans-Shipping Plant in Antwerp.) H. Seidel. Ver. deu. Ing. Oct. 27, '28.

**I. Harbors**

The Harbor Plan of Chicago.\* West. Soc. Engrs. Oct., '28.

**H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics****a. Railroads****1. General Articles**

Missouri Pacific Lines Improve.\* Ry. Age Nov. 3, '28.

Caractéristiques à Donner aux Lignes Nouvelles de Chemins de Fer, dans les Pays Neufs.\* (Characteristics to be Given New Railway Lines in New Countries.) M.-M. Nicolas. Gen. Civ. Oct. 6, '28.

Verkehrsschwankungen und Wirtschaftlichkeit des Eisenbahnbetriebes.\* (Traffic Variations and Economy of Railway Operation.) Liebbrand. Ver. deu. Ing. Sept. 1, '28.

**4. Track**

Transverse Fissures Can Now Be Located.\* Ry. Age Nov. 17, '28.

Le Traitement Thermique des Rails en Service.\* (Thermal Treatment of Rails in Service.) Edmond Marcotte. Gen. Civ. Sept. 8, '28.

Vole Normale en Rails à Large Ornière Supprimant les Contre-Rails pour les Ports, Quais, Traversées de Route, Courbes de Faible Rayon.\* (Standard track of Wide-Grooved Rails, Avoiding Guard Rails, for Ports, Docks, Road Crossings, Curves with small Radii.) Rev. Gen. Oct., '28.

**6. Rolling Stock (Locomotives, Cars) Fuel**

Die neuen Vorschriften der Deutschen Reichsbahn-Gesellschaft für die Umgrenzung des lichten Raumes für Normalspurbahnen (auch gültig für Anschlussgleise).\* (The New Regulations of the Deutschen Reichsbahn Gesellschaft for the Restriction of the Maximum Moving Dimensions of Standard Gauge Railways (Also Valid for Private Sidings).) J. Kuhnke. Z. d. Bauver. Oct. 10, '28.

The Diagramming of Locomotive Workings.\* J. G. B. Sams. Engr. Oct. 19, '28.

Tests to Determine Truck Action.\* Ry. Age Oct. 27, '28.

Suburban Locomotives for the Boston & Albany.\* Ry. Age Nov. 10, '28.

Wagons-Tomberaux & Wagons Plata à Bogies de 40 Tonnes, Étudiés par l'Office Central d'Etudes de Matériel de Chemins de Fer.\* (Dump Cars and Flat Cars with 40-Ton Trucks, Studied by the Office Central d'Etudes de Matériel de Chemins de Fer (Central Bureau for Studying Railway Equipment).) Vallanciel. Rev. Gen. Oct., '28.

Locomotive d'Essais du Réseau de l'Etat allemand Chauffée au Lignite Pulvérisé.\* (Test Locomotive for the German Government System, Fired with Pulverized Lignite.) Gen. Civ. Oct. 27, '28.

Die Schmidt-Hochdrucklokomotive. Entwicklung und Bauart.\* (The Schmidt High Pressure Locomotive. Development and Type of Construction.) Wagner. Ver. deu. Ing. Oct. 27, '28.

**7. Use of Electricity**

Electric Control Unit for Motor Coaches.\* Ry. Age (Section 2) Oct. 27, '28.

Great Northern Railway Electrification in the Cascades.\* Edward L. Moreland and Ralph D. Booth. A. I. E. E. Nov., '28.

Arrangements of Feeders and Equipment for Electrified Railways.\* R. B. Morton. A. I. E. E. Nov., '28.

Narrow Gauge Railroad of Boston Is Electrified.\* Ry. Age Nov. 10, '28.

L'Electrification du Chemin de Fer du Maroc.\* (Electrification of the Morocco Railway.) Parodi. Soc. Ing. Civ. Fr. May, '28.

**8. Stations, Terminals, Engine Houses, Shops**

Speeding Up a Railroad Yard.\* James R. Randolph. Sci. Am. Nov., '28.

The Economics of Car Retarders.\* Kent T. Healy and P. H. Jacobs. Ry. Age Nov. 3, '28.

Note sur les Ateliers de Réparation de Locomotives des Chemins de Fer de l'Etat à Sotteville (Quatre-Mares).\* Note on the Locomotive Repair Shops of the Etat Railways at Sotteville (Quatre-Mares).) Renaud. Rev. Gen. Oct., '28.

**9. Technical and Commercial Use**

Operating the Santa Fe's Motor Coaches.\* Ry. Age (Section 2) Oct. 27, '28.

Santa Fe Speeds Up Wheat Movement.\* Ry. Age Nov. 17, '28.

Das Verladen und Lagern umladeempfindlicher Schüttgüter.\* (Loading and Storing of Bulk Material Sensitive to Handling.) H. Aumund. Ver. deu. Ing. Sept. 1, '28.

**b. Special Railroads****2. Aerial Railroads (Funicular, Monorail)**

Die Personenseilschwebbahn Mariazell-Bürgeralpe.\* (The Mariazell-Bürgeralpe Passenger Aerial Cableway.) Franz List. Oest. Ing. Arch. Ver. Oct. 12, '28.

**c. Ferry Boats**

What the Barge Lines Are Doing.\* Ry. Age Serial beginning Oct. 27, '28.

Diesel-Electric Ferry Boat for the Argentine Government.\* Eng. Nov. 2, '28.

**d. Street Railways, Elevated Railways, Subways****1. General Articles**

Modernizing the Suburban Transit of the Metropolitan District.\* Discussion: John A. Miller, Jr., Daniel L. Turner, Billings Wilson, Fred Lavis, Gustav Lindenthal, and Charles Evan Fowler. Am. Soc. C. E. Nov., '28.

**6. Traction**

The Possible Application of High-Frequency Power to Electric.\* W. Cramp. (Paper read before British Assoc.) Eng. Oct. 26, '28.

## e. Automobiles

## 1. Steam Automobiles

- Points in Motor Coach Garage Design.\* H. M. Steward. Ry. Age (Section 2) Oct. 27, '28.  
 Projekt einer Grossgarage am Freihausgelände.\* (Plan for a Large Garage on the Site of the Freihaus.) Stephan Simony. Oest. Ing. Arch. Ver. Sept. 28, '28.

## f. Aeronautics

## 1. General Articles

- Recent Airship Development. C. E. Rosendahl. Oct., '28.  
 Commercial Aviation. William B. Stout. Engrs. & Eng. Oct., '28.  
 Military Aviation.\* Wm. E. Gillmore. Mech. Eng. Nov., '28.  
 Gegenwartsfragen der Aerodynamik.\* (Modern Questions in Aerodynamics.) H. Blenk. Ver. deu. Ing. Oct. 6, '28.  
 Flugzeuge der elften Pariser Luftfahrt-Ausstellung.\* (Airplanes at the Eleventh Paris Aviation Exhibition.) F. Gossiau. Ver. der. Ing. Oct. 6, '28.  
 Neuere Festigkeitsfragen im Flugzeugbau.\* (Recent Questions on Strength in Airplane Construction.) Karl Helmut Rühl. Ver. deu. Ing. Oct. 6, '28.  
 Der Saurer-Jupiter-Flugmotor.\* (The Saurer-Jupiter Airplane Engine.) Schw. Bauz. Oct. 20, '28.

## 3. Aeroplanes

- Bordgeräte im Verkehrsflugzeug.\* (Instruments for Passenger Airplanes.) Martin Mäder. Ver. deu. Ing. Oct. 6, '28.  
 Junkers-Frachtflugzeug W 33 als Transocean-Flugzeug "Bremen".\* (The Junkers Freight Airplane W33 as the Bremen Trans-Oceanic Plane.) Alois Robert Böhm. Ver. deu. Ing. Oct. 6, '28.  
 Flugmotoren, Entwicklung und Stand.\* (Aviation Engines—Their Development and Status.) F. Gossiau. Ver. deu. Ing. Oct. 6, '28.

## 4. Aerodromes and Landing Fields

- Temporary Development of San Francisco Airport.\* George D. Burr. Eng. N. R. Nov. 8, '28.

## I. Municipal Water-Works. Agricultural Engineering. Irrigation

## a. General Articles

- Administrative Water Problems. A Symposium. Discussion: Thomas R. Newell. Am. Soc. C. E. Nov., '28.  
 Die Wasserversorgung der Stadt Concepcion del Uruguay in Argentinien.\* (Water Supply of the City Concepcion del Uruguay in Argentina.) Eigenbrodt. Gas und Wasser. Sept. 29, '28.

## b. Hydrology, Water Resources

- Reforestation of Water Sheds. Edgar P. Kable. Am. W. W. Assoc. Nov., '28.  
 Die Grundwasserträger des Niederelbegebietes.\* (The Ground-Water Carriers of the Lower Elbe Region.) E. Koch. Gas und Wasser. Sept. 15, '28.  
 Das Grundwasserwerk Curslack, ein weiterer Schritt zur Loslösung der Hamburger Wasserversorgung von der Elbe.\* (The Curslack Ground Water Works, a Further Step in Releasing Hamburg from the Elbe as a Source of Water.) W. Holthausen. Gas und Wasser. Sept. 22, '28.

## c. Dams and Reservoirs

- Burbank's 7 000 000-Gallon Concrete Lined Reservoir.\* T. R. Mini and H. R. Liming. West. Constr. N. Oct. 25, '28.  
 Reservoir Covering Pays Dividends.\* C. W. Klassen and H. F. Ferguson. Am. W. W. Assoc. Nov., '28.  
 San Gabriel Flood-Control Dam in Immediate Prospect.\* Eng. N. R. Nov. 15, '28.  
 Die vierteilige Bogentalsperre am Pleasantsee, Arizona.\* (The Multiple Arch Dam on Lake Pleasant, Arizona.) Jacob Mandelker. Oest. Ing. Arch. Ver. Oct. 26, '28.

## d. Analysis and Purification of Water

- Treatment of Water for Iron Removal. E. V. Pederson. (Paper read before Iowa W. W. Conference.) Can. Engr. Oct. 23, '28.  
 Engineering Side of Public Health Discussed at Chicago. (From papers read before Am. Public Health Assoc.) Eng. N. R. Oct. 25, '28.  
 Manganese in the Croton Water of New York City.\* Frank E. Hale. Am. W. W. Assoc. Nov., '28.  
 The Fototurbidimeter in the Determination of Water Turbidity.\* Attilio A. Bado and Rogelio A. Trelles. Am. W. W. Assoc. Nov., '28.  
 The Oxygen Consumed Determination.\* Geo. W. Burke. Am. W. W. Assoc. Nov., '28.  
 The Elimination of False Presumptive Tests.\* A. C. Janzig and I. A. Montank. Am. W. W. Assoc. Nov., '28.  
 Developments in Water Softening. Charles P. Hoover. Am. W. W. Assoc. Nov. '28.

## e. Distribution of Water

- Value of a Fire Hydrant Survey. F. W. Albert. Can. Engr. Oct. 23, '28.  
 Dead Ends. S. B. Morris. Am. W. W. Assoc. Nov., '28.  
 Cross Connections—The Health Hazard vs. the Fire Hazard. Charles W. Sherman. Am. W. W. Assoc. Nov., '28.  
 Cast Iron Service Pipe.\* Wm. W. Hurlbut. Am. W. W. Assoc. Nov., '28.  
 Trans-Mountain Water Diversions. A Symposium. Discussion: B. F. Jakobsen and Paul M. Entenman. Am. Soc. C. E. Nov., '28.



## f. Drainage of Land

Ditching a Swamp With Dynamite for a Banana Plantation.\* W. F. Hahneman. Eng. N. R. Nov. 8, '28.

## J. Sewerage. Sewage and Refuse Disposal

## a. Sewers and Drains

Constructing Sewers at Nassau. Can. Engr. Nov. 13, '28.

## b. Sewage Disposal, Purification

California Sewage Problems. Clyde C. Kennedy. (Paper read before Calif. Assoc. Concrete Pipe Mfrs.) West. Constr. N. Oct. 25, '28.

Engineering Side of Public Health Discussed at Chicago. (From papers read before Am. Public Health Assoc.) Eng. N. R. Oct. 25, '28.

The Govan Refuse Power Plant.\* Eng. Serial beginning Nov. 9, '28.

Emscherbrunnen und getrennte Schlammbauung in den letzten 22 Jahren.\* (Ems Tanks and Separate Sludge Digestion in the Last 22 Years.) Franz Fries. Gesund. Ing. Serial beginning Sept. 8, '28.

Der Umbau eines Entwässerungspumpwerkes in Halle.\* (Rebuilding a Drainage Pumping Plant in Halle.) Adolf Hellmann and Karcher. Gesund. Ing. Sept. 22, '28.

## K. Heat Engines

## a. Steam Engines, Boilers

La Tôle à Chaudière. Conditions de Réception.\* (Boiler plate. Acceptance Conditions.) Ch. Dubosch. Ann. T. P. Belg. Oct., '28.

## c. Gas and Oil Engines

La Propulsion par Réaction, au Moyen de Fusées, Appliquée aux Automobiles et aux Avions.\* (Propulsion by Reaction, by Means of Rockets, Applied to Automobiles and Airplanes.) G. Delanghe. Genie Civil Oct. 6, '28.

## x. Miscellaneous

La Centrale Thermique Klingenberg, à Berlin.\* (Klingenberg Thermal Central Station in Berlin.) Gen. Civ. Sept. 8, '28.

## L. Electricity

## b. Distribution and Transmission of Electricity

## 1. Power Plants

The Maentwrog Generating Station and Electricity Supply in North Wales.\* Engr. Serial beginning Oct. 19, '28.

The Trenton Channel Station of the Detroit Edison Company.\* Ralph Briscoe. Eng. Oct. 19, '28.

The Gould Street Generating Station of the Consolidated Gas, Electric Light and Power Company.\* A. S. Loizeaux. A. I. E. E. Nov., '28.

## 2. Long-Distance Transmission of Energy

Transmission de l'Énergie Électrique à Haute Tension par Câbles Souterrains.\* (Transmission of High Tension Electrical Energy by Underground Cables.) Gen. Civ. Oct. 20, '28.

## c. Electric Lighting

Hours of Municipal Street Lighting.\* Edgar Dow Gilman. Eng. N. R. Nov. 1, '28.

## d. Mechanical Uses of Electricity

## 3. Welding

Repairing a Truss Bridge Under Traffic by Arc Welding.\* L. B. Woodruff. Eng. N. R. Oct. 25, '28.

Welding Steel Buildings by Electricity.\* Frank P. McKibben. (Paper read before Am. Weld. Soc.) Can. Engr. Nov. 13, '28.

## e. Electrochemistry and Electrometallurgy

Die elektrischen Schmelzöfen in der Eisen- und Metall-Industrie.\* (The Electric Smelting Furnaces in the Iron and Metal Industry.) Erwin Häuser. Oest. Ing. Arch. Ver. Serial beginning Sept. 28, '28.

## M. Architecture

## a. Educational, Government and Scientific Buildings

Le Résidence-Palace, à Bruxelles.\* (The Residence Palace in Brussels.) Alfred Bijls. Gen. Civ. Oct. 20, '28.

## f. Factories and Mill Buildings

A Large Canadian Newsprint Paper Mill.\* Engr. Nov. 9, '28.

**I. Fire Protection**

Effect of Earth Shocks on Structures.\* Discussion: Rudolf Briske, Harry O. Wood, and R. R. Martel. Am. Soc. C. E. Nov., '28.

**O. Administration. Legislation. Economics. Statistics****b. Economic Questions of a General Character, Valuations**

Duties of the Engineer in Connection with Land Takings. Bost. Soc. C. E. Oct., '28.  
Letting Construction Work by Competitive Bidding. Edward W. Bush. Am. Soc. C. E. Nov., '28.

**d. Administrative and Financial Management of Means of Communication****2. Routes and Roads**

Urban Responsibility for Road Improvement. S. L. Squire. (Paper read before Can. Good Roads Assoc.) Oct. 9, '28.  
The Principle of the Gasoline Tax and Experiences Therewith. Wm. A. McAtee. (Paper read before Can. Good Roads Assoc.) Can. Engr. Oct. 9, '28.  
Organization for Highway Contractors. A. H. Hunter. (Paper read before Am. Road Bldrs. Assoc.) Can. Engr. Oct. 23, '28.  
Economic Comparisons of Various Types of Road Surfacing.\* A Symposium. Am. Soc. C. E. Nov., '28.

**Q. Surveying and Geodesy**

Meridian From Polaris Azimuth Method.\* James Weir. Can. Engr. Oct. 16, '28.  
Horizontal Control in Surveying: Preliminary Report of the Committee of the Surveying and Mapping Division on Horizontal Control. George L. Hosmer. Am. Soc. C. E. Nov., '28.

**S. City Planning**

Moving the City of American Falls, Idaho.\* Ivan E. Houk. West. Constr. N. Oct. 25, '28.  
Development of Regional Planning. J. Clark Keith. (Paper read before Town Plan. Inst. Can.) Can. Engr. Oct. 30, '28.  
Street Designing for Various Uses. Discussion: Harold M. Lewis, W. W. Crosby, W. C. Sawyer, William C. Reeder, and William T. Lyle. Am. Soc. C. E. Nov., '28.  
Messe- und Stadtentwicklung in Leipzig.\* (Fair Grounds and City Development in Leipzig.) H. Ritter. Z. d. Bauver. Oct. 17, '28.  
Industrie und Kleinstadt im Münsterland.\* (Industry and Small Town in Munsterland.) Heinrich Solinus. Tech. Gemein. Oct. 20, '28.

## Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers. A Chicago office is maintained in co-operation with the Western Society of Engineers, and a San Francisco office, in co-operation with the Engineers' Club of San Francisco and the California Section of the American Chemical Society. The Service is available only to the several memberships and is maintained by contributions from the Societies and their individual members who are directly benefited.

*Offices.*—Eastern Office, 31 West 39th Street, New York, N. Y., Walter V. Brown, Manager; Chicago Office, 205 West Wacker Drive, 1216 Engineering Building, Chicago, Ill., A. Krauser, Manager; and San Francisco Office, 57 Post Street, Room 715, San Francisco, Calif., Newton D. Cook, Manager.

*Men Available.*—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Service for a period of three months, and are renewable on request. Notices for *Proceedings* should be addressed to Employment Service, 31 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

*Opportunities.*—A bulletin of engineering positions available is published weekly and may be obtained by members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

*Voluntary Contributions.*—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of 1½% of yearly salary; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the Service.

*Replies to Announcements.*—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Service after the positions to which they refer have been filled, will not be forwarded.

### MEN AVAILABLE

SALES ENGINEER, Assoc. M. Am. Soc. C. E.; college graduate, age 38; married. Ten years' general engineering, construction, and contracting experience; three years, selling. Wishes permanent connection selling builders' and architects' supplies. New York City and vicinity. A-4296.

CIVIL ENGINEER, M. Am. Soc. C. E. About 15 years on water supply construction, maintenance, and operation, also hydro-electric construction, preferring

water from the dam up; also about 15 years' experience along the lines of city engineer with highway and railroad location, construction and maintenance. Speaks Spanish. Will go to Latin America or the Far East. A-5380.

EXECUTIVE ENGINEER, Assoc. M. Am. Soc. C. E.; age 41; married; 10 years' full charge, municipal work; 5 years. Latin America, harbor improvements, railroads, roads, and buildings by direct ad-

ministration. Good organizer with business experience. Speaks good Spanish. Prefers industrial management, Latin America. B-955.

ENGINEER, EXECUTIVE, M. Am. Soc. C. E.; graduate civil engineer with degrees; age 39. Broad experience in structural and industrial work including allied mechanical lines. B-6046.

ENGINEER ON CONSTRUCTION, Assoc. M. Am. Soc. C. E.; B. S. in C. E., 1916; age 34; single. Seven years' surveying experience, triangulation, topography hydrography; some of this on hydro-electric development. One year, highway drafting. Last three years, building construction work in Chicago. B-6205-1168. Chicago.

CIVIL ENGINEER, M. Am. Soc. C. E.; graduate, Mass. Inst. Tech.; age 37; specializing in highway engineering and construction. Fifteen years' experience. Now completing preliminary survey and report for a \$30 000 000 project. Financing delayed. Available on short notice. Salary, \$5 000 per year. Location, immaterial. B-6574.

CIVIL AND SANITARY ENGINEER of long standing; M. Am. Soc. C. E. Experienced in municipal work and industrial building, especially large-scale water-works improvements, design, and general supervision. Wishes a responsible position in an engineering corps. A location in vicinity of New York City or St. Louis, Mo., is preferred. B-7173.

STRUCTURAL DESIGNER, Jun. Am. Soc. C. E.; graduate; age 27. Four years, assistant to consulting engineer on building construction; designing, investigations, reports, supervision; apartment houses, schools, hotels, office buildings, etc.; desires position with architect, consulting engineer, or contractor in New York. B-7382.

CIVIL ENGINEER, M. Am. Soc. C. E. Twenty years' experience, railroad location, highway, precise surveys, irrigation, and reinforced concrete construction. Competent to make investigations for hydro-electric development reports and estimates on engineering work. Thoroughly conversant with Latin America. Will accept any reasonable foreign engagement. B-7494.

CIVIL ENGINEER, M. Am. Soc. C. E.; age 43; married. Seventeen years' railroad experience in office and field, including location, construction, and maintenance. Past seven years in office of Chief Engineer of railroad system as Assistant Engineer. Has made extensive studies of grade reduction problems. B-9037.

CIVIL ENGINEER, M. Am. Soc. C. E. Twenty-three years experience, design and construction of steel and reinforced concrete, bridges, buildings, etc., railroad, and municipal works. Open for position as chief engineer, superintendent, or similar. B-9497.

OFFICE OR FIELD ENGINEER, Assoc. M. Am. Soc. C. E.; age 31. Ten years' experience, railway maintenance and construction, highway location, design, and construction, public utilities, and industrial construction. Neat rapid draftsman; accurate field man. Desires permanent loca-

tion with railway, public utility, or other industrial enterprise. Can report for duty on ten days notice. B-9582.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; age 25; graduate; New York State license; land surveyor, chief of party on reinforced concrete work for railroad electrification; assistant engineer in charge of field work, reinforced concrete building construction. Desires connection with building contractor or foundation contractors. Location, East. C-918.

ASSISTANT CIVIL ENGINEER, Jun. Am. Soc. C. E.; age 27; single. Physical testing materials, field party with New York Central Railroad, building construction; erection of machinery, inspection, cost finding. C-2975.

RECENT GRADUATE, Jun. Am. Soc. C. E.; B. S. in C. E., 1927; age 26; single; summer with State Highway department as inspector in charge of field laboratory on concrete paving work. Past nine months, University research assistant in study of probability of flood flows. Graduate work in hydraulic construction and municipal water supply. Location immaterial. C-3063.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Cornell graduate; age 32; married. Ten years' experience in design and supervision of construction of highways, city pavements, sewer systems, sewage disposal plants, and water-works. Four years in charge of municipal engineering organization. Location, West, South, or Midwest. C-3741-1929. Chicago.

CIVIL ENGINEER, EDITOR; Assoc. M. Am. Soc. C. E.; age 44; with experience in railroad, municipal, topographic and hydrographic engineering; also in teaching and writing. Thoroughly familiar with aerial surveying methods. Qualified as expert topographic engineer, or as editor for civil engineering journals. C-4007.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E. Twenty-seven years' experience; seven years, designing, estimating, investigations, reports; twenty years in field as general superintendent and construction superintendent on general construction; especially excavation, bridge and building foundations, wooden and reinforced concrete piers, wharves, terminal developments, and building, floating dry docks. Location, United States or West Indies. C-4954.

FIELD ENGINEER, Jun. Am. Soc. C. E.; Technical graduate; age 26. Eighteen months as Chief of Party on all types of highway surveys. Two years, responsible charge of transmission line surveys and construction, dam surveys, and inspection. Prefers South American connections. Available on short notice. C-5009.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 29; single; specialist in municipal work, with experience in reinforced concrete bridge design and sewer, paving, and water-works design and construction. Registered civil engineer, State of Michigan. Location, Chicago, Ill., or Detroit, Mich., area. C-5257-1958. Chicago.

ASSISTANT SUPERINTENDENT, Assoc. M. Am. Soc. C. E.; age 33; married. Construction engineer, 8 years responsible

charge, construction layout and supervision. Wide experience in foundation work, reinforced concrete bridges, having just completed two projects costing \$2 125 000. Desires connection with contractor where there is opportunity for advancement. C-5282.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; Cornell graduate; age 27. Five years' experience with a public utility on West Coast on hydro-electric developments, both field and office work. Employed at present, but desires hydraulic and concrete design, no preference as to location. C-5284.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; 1925 graduate; age 27; married. Design and construction. One year, machine shop work and drafting. Three and one-half years, highway engineering, field and office. Prefers engineering work other than highway. Location, Middle West, West, or South. C-5293.

GRADUATE CIVIL ENGINEER, Jun. Am. Soc. C. E.; age 28. Six years' experience on construction of interstate vehicular tunnel. Field work on survey party, heading and concrete inspection. Office engineer, computations, drawings, records of all kinds, all estimates. Adaptable to New York. Location preferred, East. C-5294.

STRUCTURAL ENGINEER, Assoc. M. Am. Soc. C. E.; age 38; married. Eighteen years' experience, specializing on the design, estimating and contracting of coal storage, reclaiming and unloading plants including traveling unloading towers, skip hoists, drag scrapers, and belt conveyors. Location, United States or foreign. C-5316.

ENGINEER, PROFESSOR, Assoc. M. Am. Soc. C. E.; B. S. C. E. 1922; C. E. 1923; age 30; married. Two years as engineering drawing instructor; total teaching, three years. One year, surveying and construction. Five years, present position, steel industry, analyzing, designing, testing statically indeterminate structures. Desires permanent teaching or research in mechanics with responsibility commensurate with experience. Excellent record, references. C-5354.

STRUCTURAL ENGINEER, M. Am. Soc. C. E.; graduate civil engineer; Assoc. M. Am. Welding Soc.; now Sales Manager, structural steel and ornamental iron fabricating shop, desires to make change. Thoroughly experienced in sales, estimating, costs and cost analysis; competent designer, well posted on electric arc welding shop methods. B-7445.



## Membership

(From November 3 to December 4, 1928)

### Additions

MEMBERS		Date of Membership.	
ALBERS, John Clarence. City Engr. and Supt. of Streets, City Hall, Beverly Hills, Calif.....	Assoc. M.	Nov. 12, 1928	
ALLEN, Joseph Euclid. Box 453, Bishop, Calif.....	Assoc. M.	July 16, 1928	
AMBLER, Jesse Paul. Asst. Engr. of Constr., State Dept. of Highways (Res., 944 Woodlawn Ave.), Scranton, Pa.....	Jun.	June 1, 1920	
ANDERSON, George Harold. City Engr. and County Supt. of Highways, Annex Bldg., Herrin, Ill.....	Assoc. M.	Nov. 12, 1928	
ANDERSON, Willard Avon. 11307 Normal Ave., Chicago, Ill....	Jun.	Oct. 1, 1928	
ASH, Charles. Res. State Highway Engr., 330 South Charles St., Lima, Ohio.....	Assoc. M.	Nov. 12, 1928	
BAKER, Arvid Harry. Asst., Research and Tests Div., Bridge Dept., The Port of New York Authority, New York, N. Y. Res., 654 Bergen Ave., Jersey City, N. J.).....	Jun.	Nov. 12, 1928	
BARKLEY, Francis Warren. 1140 West Grace St., Richmond, Va.	Jun.	Oct. 1, 1928	
BASKETT, John Lewis. Engr., Christy-Dolph Const. Co. (Res., 2917 Douglas St.), Dallas, Tex.....	Jun.	July 12, 1926	
BATEMAN, Albert John. Asst. Engr., R. D. Van Alstine (Res., 1030 Stanley Ave.), Long Beach, Calif.....	Assoc. M.	Mar. 5, 1928	
BEEHLER, Vernon Dalzell. 43 West 12th St., New York, N. Y.	Jun.	Oct. 1, 1928	
BERDESHEVSKY, Peter G. Advisory Engr., A. M. Lampert & Co., Inc., 44 Pine St., New York, N. Y.....	Jun.	Nov. 15, 1926	
BETTERLY, John Austin. 1420 Fourth Ave., Coraopolis, Pa.....	Assoc. M.	Nov. 12, 1928	
BJORK, Gustaf Emmanuel. 1500 Upson Ave., El Paso, Tex.....	Jun.	Nov. 12, 1928	
BJORN, Peter Frederik Christian Hans. 2239 Parker St., Berkeley, Calif.....	Jun.	Nov. 12, 1928	
BOLINAS, Andres Jr. Civ. Engr. Surv. and Contr., P. O. Box 50, Legaspi, Albay, Philippine Islands.....	Assoc. M.	June 4, 1928	
BOWDEN, Nicholls White. Engr., U. S. Engr. Office, Pittsburgh, Pa.....	Jun.	June 4, 1928	
BOYER, Marion Clifford. Junior Engr., U. S. Geological Survey, Boise, Idaho.....	Assoc. M.	Mar. 15, 1926	
BRICKHAM, Leonard Albert. 1302 South Vine St., Denver, Colo.	M.	July 16, 1928	
BROWN, Charles Daniel. 146 First St., Woodridge, N. J.....	Jun.	Oct. 1, 1928	
BROWN, Nelson Manning. Surv., Box 522, Oyster Bay, N. Y.....	Jun.	Oct. 1, 1928	
BROWN, Theron McCabe. Designing Engr., Water Supply Div., City of Dallas (Res., 4211 Lemmon), Dallas, Tex.....	Assoc. M.	June 4, 1928	
BUCK, Roland Clifford. Engr., U. S. Bank Bldg., Superior, Wis....	Assoc. M.	Nov. 12, 1928	
BUTLER, Robert Byron. Supt., Tibbetts Constr. Co., Box 67, Huntsville, Tex.....	M.	Nov. 12, 1928	
CARD, Hugh Cleveland. Junior Engr., State Highway Dept., Box 217, Pineville, Ky.....	Jun.	Nov. 12, 1928	
CASE, Kenneth Twichell. Box 325, Klamath Falls, Ore.....	Jun.	Nov. 12, 1928	
CHARM, Leo Morris. Engr. of Constr., Rosoff Subway Constr. Co. (Res., 41 St. Nicholas Terrace), New York, N. Y.....	Assoc. M.	Nov. 12, 1928	
CLUTE, Harold Moore. Instrumentman, M. of W., U. P. R. R., Box 188, North Platte, Nebr.....	Jun.	Nov. 12, 1928	
COLLISSON, Norman Harvey. (Wm. H. Collisson, Jr. & Bro.) (Res., 334 Central Ave.), Ocean City, N. J.....	Jun.	Nov. 26, 1923	
COPELAND, Ray Edwin. Junior Civ. Engr. Draftsman, Los Angeles County Road Dept., Los Angeles (Res., 822 North Orange Grove Ave., Hollywood), Calif.....	Assoc. M.	Nov. 12, 1928	
COSGROVE, Frank Hester. Structural Designer, Canadian Gen. & Finance Co., Care, Light & Power Co., Caixa do Correio "a", São Paulo, Brazil.....	Jun.	June 4, 1928	
CRAWFORD, Robert Earl. 2 South Clinton Ave., Trenton, N. J....	Jun.	Oct. 1, 1928	
CUSHING, Allston Tattrie. Senior Valuation Engr., U. S. Dept. of Agriculture, 508 Huntzinger Bldg., Kansas City, Mo.....	Jun.	Nov. 12, 1928	
DAUNER, Edward Jacob. Surv. and Regulator, 16th Dist. Bureau of Eng. and Surveys, 600 Rising Sun Ave. (Res., 1606 West Lehigh Ave.), Philadelphia, Pa.....	Assoc. M.	Nov. 12, 1928	
DAVIDSON, Frank Albert. Care, Edward Corning Co., 204 East 39th St. (Res., 320 East 196th St.), New York, N. Y.....	Assoc. M.	Nov. 12, 1928	
DISARIO, Gabriel Michael Anthony. 95 Lexington St., East Boston, Mass.....	Jun.	Oct. 1, 1928	
DOBROVOLSKY, Alexander N. Draftsman and Computer, State of Washington (Res., 4510 Brooklyn Ave.), Seattle, Wash.....	Jun.	Oct. 1, 1928	
DONISI, Joe Dante. North and Sulphn Sts., Middletown, Ohio....	Jun.	Oct. 1, 1928	
DOTY, Roberts Osborn. With Union Tool Co., Torrance (Res., 4119 Camero Ave., Los Angeles), Calif.....	Jun.	Nov. 12, 1928	

MEMBERS—(Continued)		Date of Membership.
DOUCHA, John Charles. Structural Engr., Constr. Dept., Montgomery Ward & Co., Chicago, Ill.	Assoc. M. Jun.	Nov. 12, 1928 Nov. 12, 1928
DURKIN, John Joseph. 1867 East 82d St., Cleveland, Ohio.	Jun.	Nov. 12, 1928
EATON, Edwin Harvey. 9 Roxbury Rd., Scarsdale, N. Y.	Jun.	Nov. 12, 1928
ENKE, Glenn La Vine. Draftsman, Am. Bridge Co. (Res., 257 Chase St.), Gary, Ind.	Jun.	Nov. 12, 1928
EVERHART, Calvin Cecil. 421 West 118th St., New York, N. Y.	Jun.	Nov. 12, 1928
FIELD, Gilbert Roblin. U. S. Engr. Office, P. O. Drawer 667, Vicksburg, Miss.	Jun.	Nov. 12, 1928
FISHER, Harry LeRoy. Asst. City Engr., City Hall (Res., 1317 Chamberlain Ave.), Mobile, Ala.	M.	Nov. 12, 1928
FRANK, Aaron Herbert. Squad Boss, Harris Structural Steel Co., 1440 Broadway, New York (Res., 664 Pennsylvania Ave., Brooklyn), N. Y.	Jun. Assoc. M.	May 15, 1917 Nov. 12, 1928
FRIEDRICH, Victor. Engr. and Surv., Walton & Arneson, 341 Milam Bldg., San Antonio, Tex.	Assoc. M.	Nov. 12, 1928
GAMET, Merrill Bartlett. Instr., Structural Eng., School of Eng., Northwestern Univ. (Res., 557 Michigan Ave.), Evanston Ill.	Jun.	Oct. 1, 1928
GARBER, Daniel Mason. Res. Vice-Pres., in Chg., North Carolina Dist., North-Eastern Constr. Co., 419 Stratford Rd., Winston-Salem, N. C.	M.	Nov. 12, 1928
GIBSON, Raymond Layton. Huntersville, W. Va.	Jun.	Oct. 1, 1928
GILFILLAN, LaMartine Darlington. With The U. G. I. Contr. Co., Philadelphia (Res., 38 Logan Ave., Glenolden), Pa.	Assoc. M.	Nov. 12, 1928
GILLMAN, Allan Harold. 1119 Clark St., Toledo, Ohio.	Jun.	Nov. 12, 1928
GODDARD, James Elmer. 1104 Mercantile Bank Bldg., Dallas, Tex.	Jun.	Oct. 1, 1928
GREUBEL, Wilfred George. Care, Holabird & Root, 333 North Michigan Ave., Chicago, Ill.	Jun.	Nov. 12, 1928
GRUENBAUM, Max Joseph. Engr., D. M. Oltarsh (Res., 65 Jessup Pl.), New York, N. Y.	Assoc. M.	Nov. 12, 1928
GURLEY, Leon Raymond. With James L. Darnell, 420 Lexington Ave., Room 1951, New York, N. Y.	Assoc. M.	Nov. 12, 1928
HAINOVSKY, Nicholas John. Junior Civ. Engr., United Fruit Co., Care, Eng. Dept., Tela R. R. Co., Tela, Honduras.	Jun.	July 16, 1928
HARRINGTON, Earl Lawrence. Asst. Engr., Edward P. Lupfer Corporation, 592 Ellcott Sq., Buffalo, N. Y.	Assoc. M.	Nov. 12, 1928
HARRISON, Dwight Jr. Estimator, Anchor Fireproofing Co. (Res., 11845 La Salle Boulevard, Apartment 310), Detroit, Mich.	Assoc. M.	Aug. 27, 1928
HARTMAN, Harry Franklin. Roslyn, N. Y.	Jun.	Oct. 1, 1928
HEINS, Henry. Asst. Engr., Transit Comm., 270 Madison Ave., New York, N. Y.	M.	Nov. 12, 1928
HESS, Harry Clair. Structural Engr., 10 South 18th St., Philadelphia, Pa.	M.	Nov. 12, 1928
HOLLOWAY, Troy D. Res. Engr., Charles D. Evans (Res., Percy St.), Natchitoches, La.	Assoc. M.	Nov. 12, 1928
HOLMES, Paul Mordaunt. Asst. Engr., City of Columbus (Res., 991 East Mound St.), Columbus, Ohio.	Assoc. M.	Nov. 12, 1928
HOLST, Uffe Juul. Bridge Designer, L. I. R. R., Jamaica (Res., 6402 Fort Hamilton Parkway, Brooklyn), N. Y.	Jun. Assoc. M.	Aug. 30, 1926 Nov. 12, 1928
HOUSEL, William Stuart. Instr., Civ. Eng., Univ. of Michigan, Room 301a West Eng. Bldg., Univ. of Michigan, Ann Arbor, Mich.	Jun. Assoc. M.	Feb. 25, 1924 Nov. 12, 1928
HOWE, Walter Arnold. Care, C. C. C. & St. L. Ry., Kenton, Ohio.	Jun.	Oct. 1, 1928
HUNTER, William Bishop. Div. Engr., Board of Water Supply, 238th St. and Bronx Boulevard, New York (Res., 44 Circuit Rd., New Rochelle), N. Y.	M.	Nov. 12, 1928
JAHN, John Royal. Civ. Engr. with C. C. Kennedy (Res., 2323 Eunice St.), Berkeley, Calif.	Assoc. M.	Nov. 12, 1928
JOHNSON, Henry Dexter, Jr. Designing Engr., Bureau of Bridges and Structures, Dept. of Public Works (Res., 5869 Northumberland St.), Pittsburgh, Pa.	Assoc. M.	Oct. 1, 1928
JOHNSON, Ralph Peter. 519 Tenth Ave., S. E., Minneapolis, Minn.	Jun.	Nov. 12, 1928
KAUFMAN, Solomon. Junior Engr., Board of Transportation, New York (Res., 1647 West 8th St., Brooklyn), N. Y.	Jun.	Nov. 12, 1928
KELCH, Norman Wallace. Chf. Supt. of Constr., with John Parkinson and D. B. Parkinson (Res., 3039 Motor Ave.), Los Angeles, Calif.	Assoc. M.	Nov. 12, 1928
KENNEDY, Robert Charles. Designing Engr., East Bay Municipal Utility Dist., 601 Ray Bldg., Oakland, Calif.	Assoc. M.	Nov. 12, 1928
KERR, William Waverley, Jr. 815 Lake St., Oak Park, Ill.	Jun.	Oct. 1, 1928
KEUFFEL, Carl Willie. (Keuffel & Esser Co.), Hoboken, N. J.	M.	Nov. 12, 1928
KINNEY, Alexander Waddell. Div. Engr., State Road Dept., Box 1256, Lakeland, Fla.	M.	Nov. 12, 1928
KUESTER, Ernest Franz. Designer, Harrington, Howard & Ash, 2905 Euclid Ave., Kansas City, Mo.	Assoc. M.	Nov. 12, 1928
KUHNEL, John William. Junior Engr., Bureau of Lighthouses, Dept. of Commerce, Airways Div., Washington, D. C.	Jun.	Nov. 12, 1928

MEMBERS—(Continued)		Date of Membership.	
LANE, Spencer Bridgman. Box 413, Blythe, Calif.....	Assoc. M.	Nov. 12, 1928	
LITTLE, Charles Rex. Allerton House, Room 747, Chicago, Ill.....	Jun.	Oct. 1, 1928	
LIVINGSTON, Ivor. Valuation Engr., Income Tax Unit (Res., 107 Flagler Apartments, 22d and H Sts., N. W.), Washington, D. C.....	M.	Nov. 12, 1928	
MCCOLL, John Rome. Civ. Engr., Thomas E. Murray, Inc., 55 Duane St., New York, N. Y. (Res., 184 Linwood Ave., Ridgewood, N. J.).....	Assoc. M.	Nov. 12, 1928	
MCCORKINGDALE, Ralph Irving. Ludlow, Mass.....	M.	Nov. 12, 1928	
MCGRATH, William John. 466 West 150th St., New York, N. Y.....	Jun.	Oct. 10, 1921	
MCLEAN, Andrew Alexander. Asst. to City Engr., City Surv.'s Office, Fitzroy (Res., 6 Oak Grove, Ripponlea), Victoria, Australia.....	Assoc. M.	Oct. 1, 1928	
MARKL, Arthur Richard Corbinian. Concrete Designer, Atmospheric Nitrogen Corporation, Syracuse (Res., Solvay Guild House, Solvay), N. Y.....	Jun.	Aug. 27, 1928	
MARTIN, Percival Arthur. Estimator, White Constr. Co., 95 Madison Ave., New York, N. Y. (Res., 18 Mt. Prospect Pl., Newark, N. J.).....	Jun.	Nov. 12, 1928	
MILSTEIN, Philip. 1527 St. Paul St., Denver, Colo.....	Jun.	Jan. 17, 1921	
MOORE, William Bion. 3412 Brown St., N. W., Washington, D. C.	Assoc. M.	Nov. 12, 1928	
MORSE, Floyd Chester. Chf. Engr. of Tests, City Engr.'s Office (Res., 2480 Tuxedo Ave.), Detroit, Mich.....	Jun.	Oct. 1, 1928	
MORSE, Roy Winchester. 4709 Nineteenth Ave. N. E., Seattle, Wash.....	Jun.	Nov. 12, 1928	
MOYER, Ralph Alton. Asst. Prof., Civ. Eng. Dept., Iowa State Coll., Ames, Iowa.....	Jun.	Oct. 1, 1928	
MULLER, Arthur Leonard. Cons. Engr., 770 Board of Trade Bldg., Kansas City, Mo.....	Jun.	April 3, 1922	
MURRAY, Howard Slater. 3448 Davis St., Oakland, Calif.....	Assoc. M.	Oct. 1, 1928	
NADEL, Louis. Asst. Engr., Office of Designing Engr., N. Y. C. R. R., 466 Lexington Ave., Room 961 (Res., 1605 Townsend Ave.), New York, N. Y.....	Assoc. M.	Jan. 17, 1921	
NEFF, Edward Rudolph. City Engr., City Hall, Miami Beach, Fla.	Assoc. M.	Nov. 12, 1928	
NELSON, Lowell Englehart. Asst. San. Engr., Div. of Eng., City of Toledo, 2259 Lawrence Ave., Toledo, Ohio.....	M.	Oct. 1, 1928	
OSGOOD, Elmer Clayton. 1602 Highland Ave., Troy, N. Y.....	Assoc. M.	July 16, 1928	
PALO, George Payne. Mass. Inst. Tech. Dorms, Cambridge, Mass.	Jun.	Nov. 12, 1928	
PAYNE, Frank Hamilton. 612 North West 6th St., Mineral Wells, Tex.....	Jun.	Nov. 12, 1928	
PETERSON, Edward Thomas. 30 South Newstead Ave., St. Louis, Mo.....	Jun.	Nov. 12, 1928	
PETERSON, Kenneth Morton. 893 South St., Roslindale, Mass.....	Jun.	July 16, 1928	
PORTER, Harold Fulton. 5717 Sherbrooke St., N. D. G., Montreal, Que., Canada.....	Jun.	Oct. 1, 1928	
PRITCHARD, Harold Olando. Junior Engr., Board of Transportation, New York (Res., 25-60 Forty-second St., Astoria), N. Y.	Jun.	Oct. 1, 1928	
RAPP, Henry Clinton. Office Engr., Rose & Evans, Burbank (Res., 532 South Gertruda Ave., Redondo Beach), Calif.....	Jun.	Nov. 12, 1928	
RAPPLEYE, Howard Snyder. Associate Mathematician, Div. of Geodesy, U. S. Coast and Geodetic Survey, Washington, D. C.	Assoc. M.	Nov. 12, 1928	
RILEY, Warren Markham Swan. 4420 Milgate St., Pittsburgh, Pa.	Jun.	Nov. 12, 1928	
RINEARSON, Horace Wayland. Vice-Pres. and Gen. Mgr., Armco Culvert Mfrs. Assoc. (Res., 214 South Main St.), Middletown, Ohio.....	M.	Nov. 12, 1928	
ROGERS, Alva Lewis. Civ. Engr. and Surv. (Res., 105 North Wayne Ave.), Wayne, Pa.....	Assoc. M.	Nov. 12, 1928	
ROLISON, Ernest Arthur. Engr., 744 Mills Bldg., San Francisco, Calif.....	Assoc. M.	Nov. 12, 1928	
ROSS, Albert Henry. Designing Engr., Mississippi Val. Structural Steel Co. (Res., 552 West William St.), Decatur, Ill.....	Assoc. M.	Oct. 1, 1928	
SAILER, Robert. Asst. Engr., Sverdrup & Parcel, 2021 Railway Exchange, St. Louis, Mo.....	Jun.	April 18, 1927	
SARRIA, Eugenio Campo. Locating Engr., Ferrocarril del Pacifico, Calle 13, No. 31 Bogota, Colombia.....	Assoc. M.	Nov. 12, 1928	
SCALES, Walter Howard. Mgr., South Western Dist., National Lumber Mfrs. Assoc., 1610 Kirby Bldg. (Res., 5712 Tremont St.), Dallas, Tex.....	Assoc. M.	Aug. 27, 1928	
SCHELBE, Thomas Gilbert. 878 Blaine Ave., Detroit, Mich.....	M.	Nov. 12, 1928	
SCHREINER, Norman George. 2516 North 17th St., Philadelphia, Pa.....	Jun.	Oct. 1, 1928	
SCHUREMAN, Leslie Robbins. 67 Wiggins St., Princeton, N. J.....	Jun.	Oct. 1, 1928	
SEIDERS, George Harold. With Bethlehem Steel Co. (Res., 41 West Church St.), Bethlehem, Pa.....	Jun.	Nov. 12, 1928	

## MEMBERS—(Continued)

Date of  
Membership.

SHARE, Nathaniel Louis. Care, I. Sack, 625 Lexington Ave. New York, N. Y.	Jun.	Nov. 12, 1928
SHARP, Josiah Roscoe. Stratfield Hotel, Bridgeport, Conn.	Assoc. M.	Nov. 12, 1928
SHATTUCK, Walter Francis, Jr. 423 Cumnor Rd., Kentilworth, Ill.	Jun.	Nov. 12, 1928
SHERWOOD, Earl Joseph. 723 Genesee Bldg., Buffalo, N. Y.	Assoc. M.	Nov. 12, 1928
SHIMKIN, Boris Michael. 164 Sixth Ave., San Francisco, Calif.	Assoc. M.	Nov. 12, 1928
SISTI, Bruno de. Draftsman, Moranti & Raymond, Inc., 115 Broad St., New York, N. Y. (Res., 490 Summit Ave., Union City, N. J.)	Jun.	Nov. 12, 1928
SMITH, Alvin Cordon. Contr. and Engr., Box 788, Scottsbluff, Nebr.	Assoc. M.	Aug. 27, 1928
SMITH, Richard Albert. Chf. of Party, Dane County Highway (Res., 207 Bernard Court), Madison, Wis.	Jun.	Nov. 12, 1928
SPENCER, Charles Burr. Vice-Pres., Spencer, White & Prentis, Inc., 709 Sixth Ave., New York, N. Y.	M.	Aug. 27, 1928
SPENCER, Ralph Wellington. Field Div., Chf. of Surveys, Big Creek Project, Box 394, Big Creek, Calif.	Assoc. M.	Oct. 1, 1928
STARKIE, John Little. Box 790, Brownwood, Tex.	M.	Nov. 12, 1928
STITZENBERGER, Wilbert. Junior Asst. Engr., Pennsylvania Water & Power Co., Holtwood, Pa. (Res., 2303 Edmondson Ave., Baltimore, Md.)	Jun.	Nov. 12, 1928
STURM, Harold Tetrick. (Upshur Eng. Co.), Buckhannon, W. Va.	Assoc. M.	Nov. 12, 1928
SULLIVAN, Jeremiah Henry. Mgr., George A. Fuller Co. of Canada, Ltd., 810 Metropolitan Bldg., Toronto, Ont., Canada.	Assoc. M.	Nov. 12, 1928
SWENDSEN, Myron. Asst. Commr. of Reclamation, State of Idaho, Box 156, Boise, Idaho.	M.	Nov. 12, 1928
TEMPLEIN, Newton Henry. Junior Bridge Draftsman, Los Angeles County Road Dept., Los Angeles (Res., 2446 Mohawk, Pasadena), Calif.	Jun.	July 16, 1928
THAYER, George Moore. 406 Federal Bldg., Tacoma, Wash.	Jun.	Nov. 12, 1928
THOMAS, George Gillett. Engr. of Bridges, A. C. L. R. R. (Res., 319 Market St.), Wilmington, N. C.	M.	Nov. 12, 1928
THOMAS, Theodor William. 673 Iglehart Ave., St. Paul, Minn.	Jun.	Nov. 12, 1928
TIDNAM, Thomas Sunman. 1 West 68th St., New York, N. Y.	Affiliate	Aug. 27, 1928
TOERNER, John Osmond Aloysius. Draftsman, John H. Wickersham (Res., 507 Pearl St.), Lancaster, Pa.	Jun.	Nov. 12, 1928
TSCHANTZ-HAHN, Albert Louis. Draftsman and Computer, R. E. Davis, Berkeley (Res., 5822 Genoa St., Oakland), Calif.	Jun.	Oct. 1, 1928
URE, James Edwin. 169 Newbury St., Boston, Mass.	Jun.	Nov. 12, 1928
VAN INGEN, Daniel Koelman, Jr. 308 Indiana Ave., Norfolk, Nebr.	Jun.	Oct. 1, 1928
VANNORT, Bertram Orlando. Perry Point, Md.	Jun.	June 4, 1928
VOGT, Fredrik. Cons. Engr., U. S. Bureau of Reclamation, Denver, Colo.	Assoc. M.	Nov. 12, 1928
WATT, James Huston. Asst. Engr., McClintic-Marshall Co., 38 South Dearborn, Chicago, Ill.	Jun.	Nov. 12, 1928
WEST, Randolph Cooper. Engr. and Contr. (West & Jensen), 2106 Second National Bank Bldg., Houston, Tex.	Jun.	Feb. 25, 1924
WHITAKER, Frank Ogburn. Oak Ridge, N. C.	Assoc. M.	Nov. 12, 1928
WHITE, Joseph Anthony. Draftsman, Am. Bridge Co., Ambridge (Res., 4009 Haverford Ave., Philadelphia), Pa.	Jun.	Oct. 1, 1928
WILDER, Burl Alton. Supt. and Engr., L. E. McLaughlin, Inc., New London, Conn. (Res., Chenango Forks, N. Y.)	Jun.	July 16, 1928
WILLIAMS, Cecil Calvert. Managing Secy. and Engr., Wenatchee Reclamation Dist., Box 491, Wenatchee, Wash.	Assoc. M.	Nov. 12, 1928
WILLIAMS, Edwin Oliver. Corona, N. Mex.	M.	Aug. 27, 1928
WOLF, Robert Donald. Mgr., Buffalo Office, Pittsburgh Testing Laboratory, 731 Elliott Sq., Buffalo, N. Y.	Jun.	Oct. 1, 1928
WOODS, Thomas Sinclair. Chairman, Eng. Corps, B. & O. R. R., Office of Asst. Engr., B. & O. R. R., Mt. Royal Station, Baltimore, Md.	Jun.	Nov. 12, 1928

## Deaths

- ALBERTSON, John Jarrett. Elected Member, March 14, 1916; died November 23, 1928.  
 BROCIENER, Alexander. Elected Member, August 23, 1922; died November 16, 1928.  
 BROWNFIELD, Wyatt Andrew. Elected Associate Member, January 19, 1925; died November 12, 1928.  
 CARLL, David Sylvanus. Elected Junior, March 7, 1888; Associate Member, July 1, 1891; Member, October 7, 1896; died November 5, 1928.  
 HELLAND, Hans. Elected Member, June 3, 1915; died March 9, 1928.  
 JENSON, Joseph Richard. Elected Junior, June 6, 1927; died October 3, 1928.  
 JOSLIN, Harold Vincent. Elected Junior, April 6, 1909; Associate Member, February 6, 1912; Member, October 8, 1918; died November 3, 1928.

**Deaths (*Continued*)**

MAWSON, George Thomas. Elected Associate Member, June 30, 1911; Member, October 10, 1927; died October 9, 1928.  
 MONROE, Will Klahr. Elected Member, October 7, 1908; died November 1, 1928.  
 NOSKA, George Albert. Elected Junior, March 31, 1896; Associate Member, September 3, 1902; Member, September 5, 1911; died November 12, 1928.  
 WIEST, Julius Christian. Elected Member, February 5, 1902; died August 30, 1928.  
 WOLCOTT, Christopher Stanton. Elected Associate Member, June 5, 1907; died July 16, 1928.

**Total Membership of the Society, December 4, 1928**


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Members .....	5 567
Associate Members .....	5 884
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Corporate Members .....	11 451
Honorary Members .....	16
Juniors .....	1 954
Affiliates .....	140
Fellows .....	7
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Total .....	13 568



